REMARKS

In response to the Office Action mailed on October 7, 2002, Applicants respectfully request reconsideration. To further the prosecution of this Application, Applicants submit the following remarks, and have added new claims. The claims as now presented are believed to be in allowable condition.

Claims 1-23 were pending in this application. By this Amendment, claims 24-29 have been added. Accordingly, claims 1-29 are now pending in this Application. Claims 1, 8, 17, 20, 21, 22 and 23 are independent claims.

Preliminary Matters

Applicants wish to thank Examiner Whittington for providing a signed IDS form in response to an IDS mailed on March 12, 2001. However, Applicants wish to point out that Applicants did not receive a signed PTO-1449 form in response to an earlier-submitted IDS mailed on October 12, 1999 with the filing of the Application. Applicants have provided a copy of this PTO-1449 form with this Amendment and respectfully request that Examiner Whittington sign and return this form.

Additionally, Applicants wish to thank Examiner Whittington for providing a copy of a Notice of Draftsperson's Patent Drawing Review critiquing informal drawings that were filed on October12, 1999. Applicants wish to point out that Applicants submitted formal drawings on July 26, 2001 but that no indication was received as to the acceptability of these formal drawings. Applicants respectfully request that Examiner Whittington include such an indication in the next correspondence from the Patent Office.

The Specification

Applicants have amended the Specification to cure a minor informality. In particular, the term "test element 40" in the paragraph on page 12, lines 10-16 was corrected to read "test procedure 40". A person reading the Specification would clearly understand that the term "test element 40" should have read "test

procedure 40" since the term "test procedure" is associated with reference numeral 40 prior to the occurrence of the informality, e.g., see the paragraph on page 12, lines 6-9 of the Specification. No new matter has been added.

Rejections Under 35 USC §102 and §103

Claims 1-6, 8-14, 16-18 and 20-23 were rejected under 35 USC §102(e) as being anticipated by U.S. Patent No. 5,892,949 (Noble). Claims 7, 15 and 19 were rejected under 35 USC §103(a) as being unpatentable over Noble in view of U.S. Patent No. 6,353,904 (Le).

Applicants respectfully traverse these rejections and request reconsideration. The claims patentably distinguish over these references, alone and in combination, and thus should be in allowable condition.

Noble discloses a Test Programming Architecture (TPA) 300 and framework for development and execution of tester programs for automatic test equipment (ATE) testers (column 1, lines 53-56 and Fig. 3). Nobel explains that a test program is a sequence of tests (column 3, line 65 through column 4, line 7). Test objects are the basic building blocks of a test program, which is itself an object (column 6, lines 9-10). Each test object encapsulates the data and operations associated with a particular kind of test or test setup (column 6, lines 11-12). For example, an ftest object is responsible for a particular functional test, and a levels object is responsible for setting up levels in the tester (column 6, lines 12-15).

As mentioned in the Background of the Specification, for example on page 2 line 7 through page 4, line 10, a typical ATE system runs ATE test programs in order to test devices, and conventional ATE test programs are formed using either a code-based approach (i.e., the user writes code) or a template-based approach (i.e., the user invokes templates provided by the manufacturer of the ATE system). One of ordinary skill in the art would understand that an ATE test program for testing devices can include multiple templates or even a combination of templates and user code.

The Noble test objects are clearly the conventional templates as referred to in the Specification. In particular, Noble explains that a test program is a sequence of tests (see column 3 line 65 through column 4, line 7 of Noble) and, from Noble's perspective, that test objects are the basic building blocks of a test program by encapsulating data and operations associated with a particular kind of test or test setup (see column 6, lines 9-12). Noble further elaborates on this point by explaining that an ftest object is responsible for a particular functional test, and a levels object is responsible for setting up levels in the tester (column 6, lines 12-15).

Le discloses methods for developing test programs for testing mixed-signal integrated circuits (see column 1, lines 9-12). Le was cited for teaching a mixed signal device performing analog and digital test operations in ATE (see page 16, lines 4-5 of the Office Action).

Claims 1-8

In contrast to the cited references, claim 1 is directed to a system for testing a device. The system includes memory having a test application stored therein, a test interface to connect to a device, and a processor coupled to the memory and the test interface. The processor is configured to operate in accordance with the test application to (i) provide a series of instructions based on a test procedure defining a device testing task, and (ii) control the test interface based on the provided series of instructions in order to test the device. The test procedure includes multiple test elements. Each test element defines instructions and programmable input variables that direct the processor to perform a particular test operation of the device testing task.

Nowhere do the cited references teach or suggest, either alone or in combination, a system for testing a device having a processor which is configured to operate in accordance with a test application to (i) provide a series of instructions based on a test procedure defining a device testing task, and (ii) control the test interface based on the provided series of instructions in order to

test the device where the test procedure includes multiple test elements and where each test element defines instructions and programmable input variables that direct the processor to perform a particular test operation of the device testing task, as recited in claim 1. Rather, Noble discloses test objects (i.e., templates) which define tests and test setups and explains that, from Noble's perspective, the Noble test objects are the basic building blocks of a test program, which is itself an object (see column 6, lines 9-12 of Noble). Accordingly, if one were to argue that one of Noble's test objects is the test procedure of claim 1 (since both the Noble test objects and the test procedure of claim 1 arguably define a device testing task), there is still no teaching in Noble that the Noble test object includes multiple test elements defining instructions and programmable input variables that direct the processor to perform a particular test operation of the device testing task, as recited in claim 1.

In fact, since Noble explains that the Noble test objects are the basic building blocks of a test program, and never seems to mention a capability forming a test object from any test elements, it appears that the Noble test objects suffer from the deficiencies explained in the Specification in connection with the conventional template-based approach, e.g., templates are complex for a user to understand and thus burdensome for the user to modify and debug, among other things (see page 4, line 23 through page 6, line 5). Moreover, Le, which was cited for disclosing a mixed signal device performing analog and digital test operations, does not teach or suggest how one could modify the Noble architecture to enable the Noble test objects (i.e., templates) to have test elements, as recited in claim 1.

For the reasons stated above, claim 1 patentably distinguishes over the cited references, and the rejection of claim 1 under 35 USC §102(e) should be withdrawn. Accordingly, claim 1 is in allowable condition.

Because claims 2-8 depend from and further limit claim 1, claims 2-8 are in allowable condition for at least the same reasons. Furthermore, it should be

understood that the dependent claims recite additional features which are not shown in the cited references.

For example, claim 3 further recites that the test procedure of the system includes (i) a first test element which defines instructions directing the processor to perform a first test operation that provides a first result, and (ii) a second test element which defines a second set of instructions directing the processor to perform a second test operation that provides a second result which is based on the first result. Accordingly, the system enables results from one test element to pass to another test element for use by that other test element, as explained in the specification for example on page 8, line 12-18 and on page 21, lines 6-9.

The Office Action on page 5, first paragraph contends that Noble discloses this in column 5, lines 1-15. Applicants respectfully disagree. Although the Office Action occasionally equates certain terms too loosely (e.g., test, test object, test procedure, etc.), the Office Action appears to contend that Noble's Persistent Object Environment Manager (POEM) and Object Runtime Adapter (ORA) are test operations and that the ORA passes information to the POEM. Even if this is the case, there is no mention of any test elements. Applicants do not think that the Office Action is trying to argue that the POEM and/or the ORA are test elements since, if anything, the POEM and the ORA seems to operate on test objects (i.e., templates). If the Examiner wishes to maintain the rejection of claim 3, Applicants respectfully request that it be pointed out with particularity where Noble discloses a system that uses a test element which defines a set of instructions directing a processor to perform a test operation that provides a second result which is based on the first result, as recited in claim 3.

Claims 9-16

In contrast to the cited references, claim 9 is directed to a method for testing a device. The method includes a step of obtaining a test procedure which defines a device testing task. The test procedure includes multiple test elements. Each test element defines instructions and programmable input variables that

direct a processor to perform a particular test operation of the device testing task. The method further includes steps of providing a series of instructions based on the test procedure, and controlling a test interface based on the provided series of instructions in order to test the device.

The cited references do not teach or suggest, either alone or in combination, a method for testing a device having a step of obtaining a test procedure defining a device testing task where the test procedure includes multiple test elements defining instructions and programmable input variables that direct a processor to perform a particular test operation of the device testing task. Rather, as explained above in connection with claim 1, Noble discloses test objects (i.e., templates) such test objects do not include multiple test elements defining instructions and programmable input variables that direct the processor to perform a particular test operation of the device testing task. Accordingly, claim 9 patentably distinguishes over the cited references for at least the same reasons as claim 1, and the rejection of claim 9 under 35 USC §102(e) should be withdrawn. Thus, claim 9 is in allowable condition.

Because claims 10-16 depend from and further limit claim 9, claims 10-16 are in allowable condition for at least the same reasons.

Claims 17-19

In contrast to the cited references, claim 17 is directed to a method for providing a test procedure for testing a device. The method includes a step of combining test elements from a test element database to form a test procedure such that (i) the test procedure defines a device testing task, (ii) the test procedure includes multiple test elements, and (iii) each test element defines instructions and programmable input variables that direct a processor to perform a particular test operation of the device testing task. The method further includes steps of setting at least a portion of the programmable input variables of each test element forming the test procedure to initial values, indicating an operating

order for the test elements forming the test procedure, and storing the test procedure within a memory.

The cited references do not teach or suggest, either alone or in combination, a method for providing a test procedure for testing a device having a step of combining test elements from a test element database to form a test procedure such that (i) the test procedure defines a device testing task, (ii) the test procedure includes multiple test elements, and (iii) each test element defines instructions and programmable input variables that direct a processor to perform a particular test operation of the device testing task, as recited in claim 17. As explained above in connection with claim 1, Noble does not teach test elements. Accordingly, Noble does not teach a method that uses test elements. Therefore, claim 17 patentably distinguishes over the cited references for at least the same reasons as claim 1, and the rejection of claim 17 under 35 USC §102(e) should be withdrawn. Thus, claim 17 is in allowable condition.

Because claims 18-19 depend from and further limit claim 17, claims 18-19 are in allowable condition for at least the same reasons.

Claims 20, 21, 22 and 23

Each of independent claims 20, 21, 22 and 23 is directed to an embodiment of the invention that uses a test element. As mentioned above in connection with claim 1, Noble does not teach test elements. Accordingly, Noble arguments similar to those provided above apply to claims 20, 21, 22 and 23, and claims 20, 21, 22 and 23 patentably distinguish over the cited references for at least the same reasons as claim 1. Thus, the rejection of claims 20, 21, 22 and 23 under 35 USC §102(e) should be withdrawn, and claims 20, 21, 22 and 23 are in allowable condition.

Newly Added Claims

Claims 24-29 have been newly added and are believed to be in allowable condition. Claims 24-27 depend from claim 1. Claim 28 depends from claim 8.

Claims 29 depends from claim 17. Applicants submit that each of these claims recites a further novel feature of the invention. For example, in Noble, Applicants cannot find any teaching of any test elements and thus no teaching of test elements passing information between each other or, for that matter, any Noble test objects (i.e., templates) passing information between each other. Accordingly, if the Patent Office rejects any of these newly claims, Applicants respectfully request that it be pointed out with particularity where the prior art discloses such features.

Support for claims 24-29 is provided within the Specification for example on page 11, line 20 through page 13, line 27 and on page 16, line 13 through page 18, line 13. No new matter has been added.

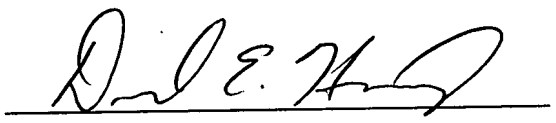
Conclusion

In view of the foregoing remarks, this Application should be in condition for allowance. A Notice to this affect is respectfully requested. If the Examiner believes, after this Response, that the Application is not in condition for allowance, the Examiner is respectfully requested to call the Applicants' Representative at the number below.

Applicants hereby petition for any extension of time which is required to maintain the pendency of this case. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50-0901.

If the enclosed papers or fees are considered incomplete, the Patent Office is respectfully requested to contact the undersigned collect at (508) 366-9600, in Westborough, Massachusetts.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

The Specification was amended as follows:

The paragraph on page 12, lines 10-16 was amended as follows:

In one arrangement, when a user creates a test procedure 40 from multiple test elements 42, the user copies the actual groupings of instructions and variables for the multiple test elements 42 from the test element database 36 into a location of the memory 22 designated for storing the test procedure 40. In this arrangement, the test procedures 40 are essentially self-contained in that each test [element] procedure 40 includes all of the instructions and variables necessary for directing the ATE system 20 to perform a particular device testing task.

The claims are amended as follows:

24. (Newly Added) The system of claim 1 wherein each test element of a set of test elements within the test procedure corresponds to a particular signal used by the device.

25. (Newly Added) The system of claim 1 wherein the test procedure includes:

a first test element that directs the processor to perform a first test operation that generates a first test result; and

a second test element that directs the processor to perform a second operation that (i) obtains the first test result generated by the first test operation performed by the processor under direction of the first test element, and (ii) generates a second test result based on the first test result.

26. (Newly Added) The system of claim 1, further comprising:

a test element database which stores a first test element having instructions that direct the processor to perform an analog signal operation, and a second test element having instructions that direct the processor to perform a digital signal operation, wherein the test procedure is configured to direct the processor to the first and second test elements to perform a mixed signal test based on the first and second test elements.

27. (Newly Added) The system of claim 1 wherein each test element defines instructions for only a partial device testing task such that the multiple test elements together form a complete device testing task for testing the device.

28. (Newly Added) The method of claim 9 wherein the step of controlling the test interface includes the steps of:

based on a first test element, performing a first test operation that generates a first test result; and

based on a second test element, performing a second operation that (i) obtains the first test result generated by the first test operation performed by the processor under direction of the first test element, and (ii) generates a second test result based on the first test result.

29. (Newly Added) The method of claim 17 wherein the step of indicating the operating order includes the step of:

designating a first test element that directs the processor to perform a first test operation that generates a first test result ahead of a second test element that directs the processor to perform a second operation that (i) obtains the first test result generated by the first test operation performed by the processor under direction of the first test element, and (ii) generates a second test result based on the first test result.